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of a mine and mill at Roxbury Falls, Conn. Feldspar showed an increase of about 20 per cent in value of product, the total reaching half a million dollars for the first time. Maine produced more than one-third of the total value, with only a little more than one-fourth of the total tonnage. The value of the year's production of feldspar and quartz amounted to less than three quarters of a million dollars.

A. D. B.

Denudation and Erosion in the Southern Appalachian Region and the Monongahela Basin. By Leonidas Chalmers Glenn. U.S. Geol. Survey. Professional Paper 72. 1911. Pp. 137; fig. 1; pls. 21.

This report presents a summary of the results of an examination made for the purpose of studying the effect of deforestation and consequent erosion of the steep mountain slopes on geologic, hydrologic, and economic conditions, both in the mountain region itself and in the surrounding area through which the streams flow. The area under consideration contains the largest and most valuable hardwood area in the United States.

The removal of forests by unscientific lumbering, by forest fires, for mining, and for agricultural purposes leaves the slopes in a condition to be eroded easily, making the run-off of rains greater and more sudden, causing floods that do great damage in the valleys. The remedies suggested are: (1) putting the cleared slopes into grass or terracing them, (2) preventing the clearing of steep slopes, and (3) the prevention of forest fires that usually follow in the wake of lumbermen.

The existing conditions are described for each river basin, and special consideration is given to the large floods of recent years. At the end in tabular form, the various river basins are classified according as their streams are in (1) timbered basins where little damage is done by floods; (2) cleared basins where floods do much damage; (3) cleared basins where floods do little damage because the soil is porous or else the clearings are largely in grass; and (4) timbered areas in which the tributaries have damaging floods due to logging on steep slopes.

A. E. F.

Characteristics of Existing Glaciers. By WILLIAM HERBERT HOBBS. New York, 1911. Pp. xxiv+301; figs. 140; pls. 34.

In this work emphasis is laid on the great difference in the laws governing mountain glaciers and bodies of inland ice, and on the geological effects of the two classes of glaciers. The dissimilarity in the REVIEWS 377

sculpturing by mountain glaciers at high and at low levels is clearly brought out. The recession of cirques is the principal process at high levels, while at low altitudes the deepening of valleys and characteristic deposits are the resulting features. A distinction is drawn between high altitude and high-latitude sculpturing. The glaciers in the former location are located on high mountains and therefore have steep gradients which is not necessarily the case for high-latitude glaciers.

In the large polar areas where inland ice is the characteristic form of glaciers, the Arctic and Antarctic each have their own characteristics, which are widely different. The north polar region is largely a sea indented on its margins by projecting land masses, while the south polar region is a continent surrounded by ocean. In the Arctic region the ice is less in areal extent than the land on which it rests, and the bergs derived from the glaciers are relatively small in size because they are calved in narrow fiords, and they are composed of solid glacier ice.

The contrast to these characteristics is found in the Antarctic region where the ice extends beyond the margins of the land into the sea, where, with augmentation by snow, there is formed the extensive shelf ice of which the Great Ross Barrier is an example. Because of the accumulation of snow on this shelf ice the surface is very level, and its upper part is, therefore, composed of soft ice. Any solid or glacier ice present is below the water level. The bergs from this extensive shelf ice are characterized by their immense size, their rectangular shape, and their white porous ice.

All the evidence for the alimentation of the extensive fields of inland ice seems to show that augmentation of material is largely along the margins; not that the snow falls there, but that the constant winds radiating outward from the interior carry in a large measure all the snows with them, and it does not become lodged until the margin is reached.

The volume is attractive for its large number of illustrations, and to the student of glaciers, for its comprehensive list of references, which, unfortunately, are grouped at the end of each chapter, necessitating the awkward suspense of turning pages to find them.

A. E. F.

The Road Materials of Washington. By Henry Landes, assisted by Olaf Stromme and Clyde Grainger. Wash. Geol. Survey Bull. 2. Olympia, 1911. Pp. 204; figs. 51; pls. 17.

In a survey of the state for road materials, the accessibility to transportation, quantity, quality, and local demand were the principal factors